Occupational HAZARDS & SAFETY

Feb. 1939

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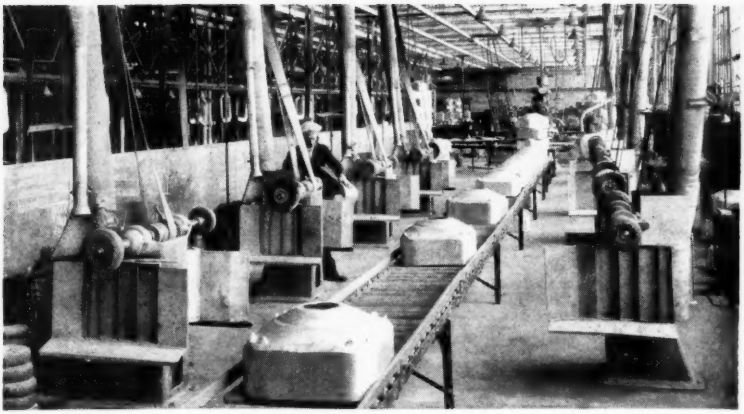

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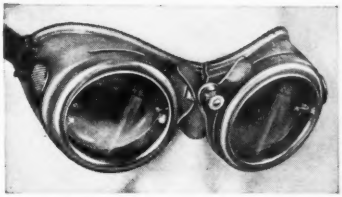
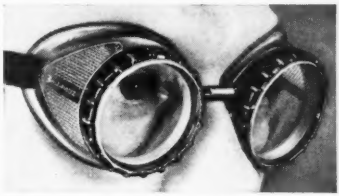


Style CC502 Transparent Cover-All Goggle



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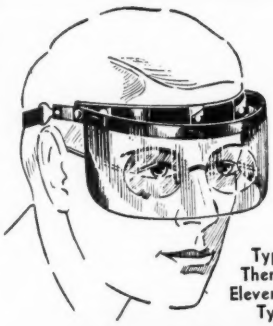

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IN many aspects, the year 1938 saw the justification of scientific research. In most fields of industry marked improvements were made in old products, and new ones were created. Particularly notable achievements were recorded in products of steel, aluminum, nickel, and the plastics.

Pure research in laboratories and applied research in laboratories and in the field are the basis for the practical application of new materials and processes in industrial operations. But it is the application which is of importance to management and to the public generally. New and better ways of doing things, and new products are the basis for economic and social advancement—they make for happier working and living, more comforts and pleasures for more people, lower prices and more goods for less money. All these are desirable.

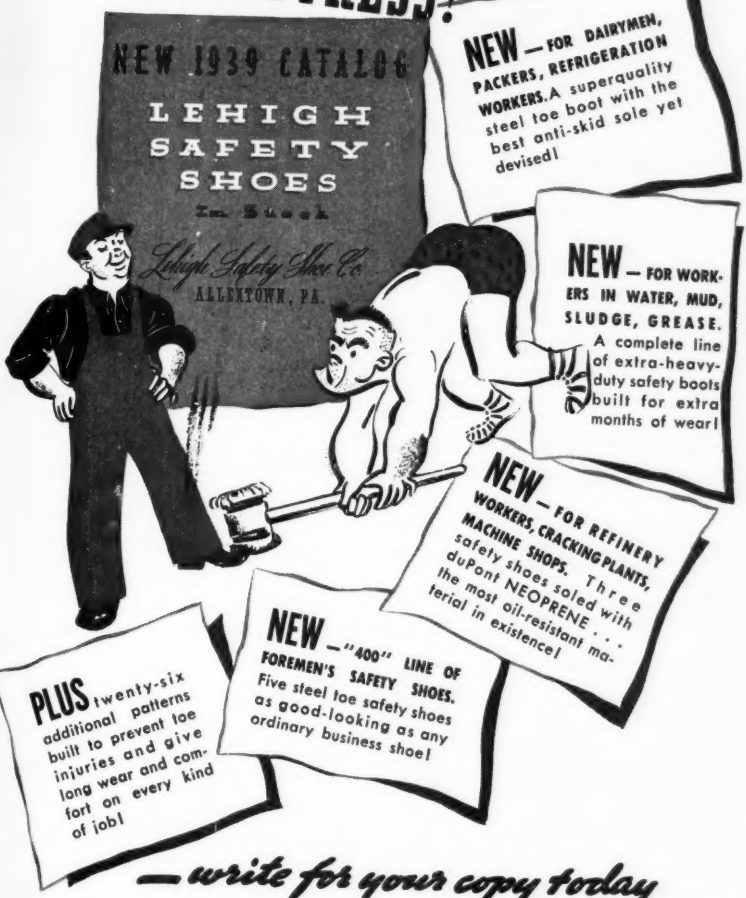
However, in the development of new materials and processes, and in the practical application of these, there may be inherent or resultant hazards to men and women converting them into goods or services. This fact is recognized today more than ever before. We hear and read such phrases as "scientific humanism," "the advancement of science," "the impact of science on society," and "social responsibilities of science."

What is the significance of this recognition to industrial management? It means, first, that management more and more will have the assistance and cooperation of scientific research in utilizing new materials and processes with greater safety to the health of employees. The end result of

[*Continued on page 28*]

JUST OFF THE PRESS!

CONTAINS



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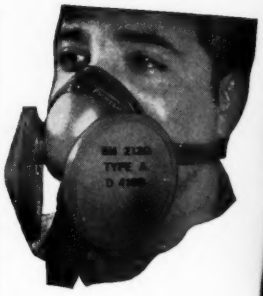

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OCCUPATIONAL Hazards AND Safety

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Front Cover: Arc welding nickel alloy plate. Full head and face shield, protective gloves and jacket, and "banker" exhaust employed for safety and comfort. Photo courtesy Lincoln Electric Co.

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Useful Free Literature ★

The publications briefly described in this service department are prepared by manufacturers' technical experts. The data they contain on equipment, supplies and prevention methods applies to varied phases of occupational hazard problems.

083—LADDER SAFETY

A folder of Saf-Leg Corporation illustrating and describing the Saf-Leg ladder attachment for rendering ladders safe in any position.

084—EYE SHIELDS

Acme Protection Equipment Co. has issued a new folder describing shields for grinding wheels.

085—FLEXIBLE TUBING

The Flexible Metal Hose and Tubing Institute has released a twenty-page booklet showing a multitude of uses for such tubing for protection and safety. Profusely illustrated.

086—INDUSTRIAL LIGHTING

The RLM Standards Institute announces the publication of a new booklet entitled "The Meaning of the RLM Label." It includes a discussion of the proper specification and installation of industrial lighting equipment.

087—ROCK DUSTING

An informative bulletin on rock dusting equipment has been released by Mine Safety Appliances Co. The bulletin illustrates and describes the equipment and its use.

088—FOOT SAFETY

International Shoe Co. announces the release of a new catalog, including a number of new features and descriptions of several new types of safety shoes.

089—WIRE ROPE

Illustrating and describing the complete production of wire rope, from the mining of the metal through the finished product, a booklet of the Gilmore Wire Rope Di-

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Plans and ideas for washrooms will be furnished by Bradley Washroom Consultants. Our free Catalog mailed also on request.

vision of the Jones & Laughlin Steel Corp., will be of great interest to industrial safety men.

090—LINEMEN'S PROTECTION

The Wm. H. Salisbury & Co. has issued a new catalog featuring linemen's rubber protective devices. Illustrations and descriptions include line hose, connectors, rubber gloves and blankets.

091—STAMPING PRESSES

Booklet of the Junkin Safety Appliances Co. describes the safe use and safeguarding of stamping presses. Also points out the points of danger in operation and safe practices.

092—DUST CONTROL

Details on hoods, fans, filter screens, precipitation methods and piping are included in a fifty page book covering all types of dust control and issued by the Pangborn Corp.

093—WELDING HOSE

A two-color pictorial folder describing the new Twinheld welding hose of the Hewitt Rubber Corp. Shows and describes hose and installation.

094—SAFETY TREADS

American Abrasive Metals Co. has released a leaflet on Feralun safety treads and floor plates. Describes the treads and floor plates, with detailed drawings for new construction and repair work installation.

095—FLOORING

An interesting, illustrated booklet has just been announced by the Inland Steel Company. This booklet describes the Inland 4-way floor plate as a means of preventing accidents.

096—EYE PROTECTION

The Stanley Electric Tool Division announces the release of a circular describing eye shields for bench grinders. Folder illustrates the shields and gives specifications.

097—FLOOR REPAIRING

A new folder issued by the Flexrock Co. illustrates and describes the application of Ruggedwear floor resurfacing material.

Hazards and Safety in Electroplating

THE electroplating industry is generally considered by the average person to be one of the "hazardous" industries. Due to the nature of the operations performed, the workers in this industry are exposed to numerous hazards. Production methods involve the use of acids, caustics, cyanides and other poisonous chemicals; and polishing operations done on high speed grinding and polishing wheels.

As a matter of actual fact, the well equipped and well run metal finishing plant can be just as safe as the average kitchen. The hazards of electroplating and metal finishing are no greater than the hazards of other industries if these three simple principles are observed: proper protective equipment and devices; proper installation; skill and exercise of carefulness.

It is hardly necessary to state that electroplating in the strict sense of the word plays only a comparatively small part in the sum total of the processes which are carried on in an electroplating plant. The surface of any material to be plated must be carefully prepared to receive the plate and after plating is completed, finished procedures are often necessary in order to produce a satisfactory job.

In order to visualize the existing hazards, let us first outline the operations involved, taking as our example a steel piece which is to be chromium

There's many a menace in the modern electroplating processes, but a modern, effective safeguard or preventive has been developed for each one of them

By M. J. Moll
Hanson-Van Winkle-Munning Co.

plated. A typical flow sheet of operations would include the following:

"Cutting down" (grinding) the raw stock.
Degreasing and electrocleaning to remove dirt, grease, oil, etc.
Rinsing in water to remove the cleaning agent.
Acid dipping to remove traces of rust and oxide, etch the steel and remove the last traces of the cleaner.
Rinsing in water to remove the acid.
Copper plating in acid or cyanide solution.
Cold and hot water rinsing to remove the copper solution.
Drying.
Buffing the copper to a high lustre.
Nickel plating in sulphate solution.
Cold and hot water rinsing to remove the nickel solution.
(If this solution is of the bright plating variety, no buffing will be necessary. If not, this plate will have to be buffed.)
Chromium plating.
Cold and hot water rinsing to remove the chromium solution.
Drying.

There are several accident hazards, and several health hazards, associated with almost every one of these electroplating flow sheet items. Let's consider them individually.

Grinding Operations

"Cutting down" calls for the grinding or polishing of the base metal on a wheel revolving at high speed (up to 6,000 feet per minute peripheral speed) coated with a hard abrasive, such as emery, aluminum oxide, etc. This "cutting down" operation presents two hazards.

1.—Mechanical—the danger of flying particles entering the eyes. Obviously this hazard can be easily and completely eliminated by the use of goggles. Every operator should be required to wear them at all times.

2.—Dusts—a hazard is created by the microscopic particles of metals and abrasives ground from the surface of the article and wheel. Because of the nuisance nature of polishing dusts, and the possibility of silicosis, it is essential that the concentration of dust in the atmosphere breathed by the workers be kept at a minimum. This can be done effectively by segregating dust producing operations from the plating processes, and installing exhaust hoods over the grinding wheels. An exhaust system will pull the particles of metal and abrasive away from the worker and lead these particles through a central dust collecting system. Respirators, approved for operations and materials involved, should be worn where the dust hazard is acute.

An inexpensive canopy type exhaust system, effective except in presence of cross drafts, for hand plating operations. Tank is provided with slotted exhaust duct along upper side.

De-greasing Steps

Degreasing involves possible contact with corrosive chemicals, such as trichlorethylene and carbon tetrachloride. Protection from injury to health is provided by the correct design and use of the degreasing machines. The commercial equipment now in use for degreasing with trichlorethylene consists of a metal tank containing the solvent, which is heated to the boiling point. A water jacket cools the hot vapors in the upper portion of the tank and causes them to condense. The parts to be cleaned are immersed in the boiling liquid, then raised and allowed to remain in the condensed vapor zone so that they may be rinsed by the condensate. After a brief time, the parts are slowly withdrawn and the tank reloaded with the parts to be cleaned. Control measures recommended for this equipment are that the degreasing tank should be so situated that a minimum of air movement will be present in its vicinity. The heating of the solvent should be controlled thermostatically.

If the operator is subjected to an excessive exposure to solvent vapors during the clean-out operation, he should be supplied with an organic solvent type respirator, which will provide him with protection throughout the entire clean-out.

Electrocleaning is generally done in mild alkali cleaners, which have little, if any, effect upon the skin. It is a safe and sound practice, however, to protect the hands with rubber gloves or protective ointments, and to wash them frequently to keep the chemicals from drying on the skin. Caustics are often used in cleaning. As they are quite corrosive, the workers' hands should be protected with rubber gloves or protective creams.

Acid-Dipping Operations

In the acid-dipping operations the strength of the acid used may be such as to make it necessary to provide an exhaust hood over the container. These hoods should be installed only after a careful survey has determined the proper type of hood, the size and the position in which it should be placed to afford the most efficient operation and the maximum protection. In many cases the acids used are diluted sufficiently to permit adequate protection to the worker by the use of aprons, rubber gloves and protective ointments. The use of acids may create harmful concentrations of vapors, mists or gases, and methods should be provided to insure that workmen are not forced to breathe hazardous concentrations of these toxic materials.

Plating Processes

Plating operations involving copper and nickel are usually carried on in fairly dilute solutions. However, platers should be provided with rubber gloves, aprons, shoes and protective ointments, as the constant contact with acid or cyanide solutions in the form of drippings will irritate the skin, especially if there are open cuts.

Two types of plating; namely, cyanide solutions, which are widely used for depositing copper, zinc, silver and gold; and chromium solutions, present unusually great hazards.

Cyanides are some of the more common chemicals found in the plating room. It is possible that hydrocyanic acid may be given off from cyanide baths in toxic quantities because of certain unusual conditions, such as high temperatures, etc. The use of cyanide calls for extreme care because of the deadly nature of the chemical.

One sided protection. Workers on automotive plant buffing and polishing jacks given respiratory protection by modern exhaust hoods, yet provided no goggles for eye protection.

It should never be handled with bare hands. Moreover, in certain types of solutions, a slight spray from the tank is in evidence, which carries some cyanides into the air. It is stated that safe conditions call for a concentration of less than 100 parts per million of hydrocyanic acid in the air. Masks specifically approved for hydrocyanic acid should be provided to platers working with the cyanide solutions.

Platers oftentimes will be found to have "cyanide sores" or "nickel itch," caused by contact with solutions which irritated the abraded parts of the skin and open cuts. The best treatment for these ailments is, of course, prevention by frequent washing, the use of protective ointments specially compounded for the specific irritants and the wearing of rubber gloves.

Chromium Plating

Chromium plating offers another hazard which, in the early days of this process, wrought havoc among the workers. The fumes of chromic acid are intensely corrosive and violently injurious. The respiratory hazards of chromium plating may result from breathing the dry chromic acid dust, or the chromic acid mist prevalent over electroplating tanks. As in the control of any other hazardous operation, control in chromium plating is best effected at points as near as possible to the origin of the hazard. In other words, the chromic acid mist rising from the tank must be eliminated or substantially reduced close to the surface of the solution. The fumes and mists can be exhausted through an overhead flue. But in rising to this flue they pass near the workmen at the tank, exposing him to an injurious hazard. Therefore, it was found that the most efficient and safest method of ventilating chromium plating tanks was to draw the air laterally across the top of the tank into slots from 1″ to 2″ wide, these slots or ducts extending fully along one or more sides of the tank, and connected to an exhaust fan through

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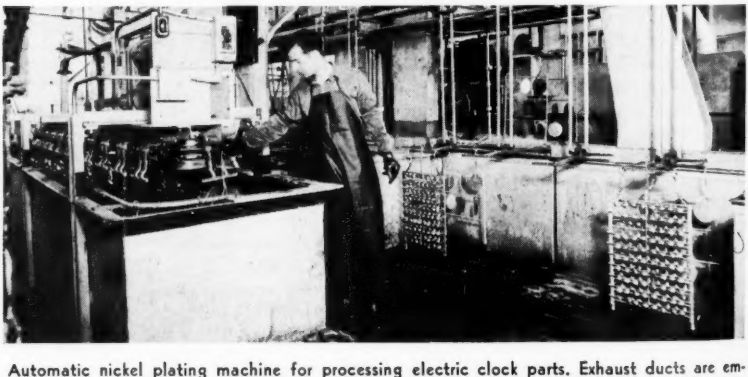
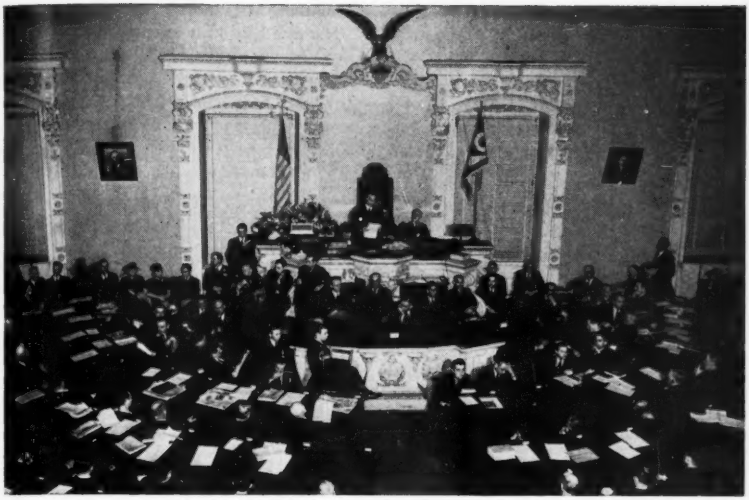


Automatic nickel plating machine for processing electric clock parts. Exhaust ducts are employed and worker wears rubber apron, gloves and boots and stands on safety flooring.



"Selective" vs. "Blanket" Provisions *in Compensation Laws*

By C. F. Sharkey

Chief, Labor Law Information Service, U. S. Department of Labor

THE principle of compensating for industrial injuries has been of comparatively recent origin in the United States. Scarcely more than twenty-five years ago the first law was passed in this country. Antedating the legislation here, a well developed system had been in operation for more than a quarter of a century in many of the nations of Europe.

Shortly after the turn of the twentieth century studies were made of the foreign workmen's compensation systems by representative groups from the United States. Some of the principles of the old world systems were adopted initially in several of the States. This was the case particularly of compensating for occupational diseases, although few laws as originally adopted in this country provided for such payment. The plan used by some of the States followed closely the English system, listing specifically in the law the diseases to be compensated. England orginally listed but six compensable diseases—anthrax, lead poisoning, mercury, phosphorus, arsenic, and ankylostomiasis, but many were subsequently added.

Extent of Legislation

On January 1, 1939, but 27 jurisdictions had occupational-disease legislation, although others compensate for occupational diseases by liberalized interpretation of accident compensation laws. There will probably be a considerable increase in the number of States compensating for occupational diseases under specific statutes during the present legislative year, judging from the number of States that recently have had commissions studying the subject, and due to report their findings soon. These States include Arkansas, Idaho, Maine, Massachusetts, Montana, New Hampshire, and Oregon. Arkansas has not previously had even a workmen's compensation law, but the way has been opened constitutionally for positive action. The electorate of that State, at the last National election, amended the State Constitution authorizing the legislature to adopt such a law. In the similar case of Mississippi, the legislature will not meet in regular session during the present year and hence there will be no opportunity for statutory action until 1940, unless the governor of the state in the meantime calls a special session of the legislature.

Methods of Compensating

In general, the various laws disclose two methods of covering occupational diseases. One, by listing the specific diseases, or the selective method; the second, by covering all occupational diseases by blanket provisions, or by the use of the word "injury" instead of "accident" in the law adopted by the legislature—characteristically used in California, Connecticut, Massachusetts, North Dakota, and Wisconsin.

The Supreme Judicial Court of Massachusetts in a number of decisions has laid down the general principle that an injury may be anything that disables a man from work. In an early case, the court held that an infection which a stableman had received from glanders was as much a bodily injury as though he had received a broken leg or arm by the kick of a horse. Again, the same court, in another case, held that a claim for lead poisoning would be allowed as for personal injuries although the word "accident" didn't appear in the state's workmen's compensation act.

Disease Coverage

An examination of the various systems discloses that ten jurisdictions use the selective method of compensating. Delaware lists 12 diseases, Michigan 31, Minnesota 23, New Jersey, 10, North Carolina 25, Ohio 21, Pennsylvania 15, Puerto Rico 15, Rhode Island 31, and Washington 21.

New York formerly listed 27 diseases, until an amendment passed in 1935 included "any and all occupational diseases." In addition to the 21 diseases specifically listed in Ohio, the legislature in this State as recently as 1937 enacted special legislation covering silicosis. During the same year, such disease was covered also in the special list of compensable diseases in the Michigan and Pennsylvania laws.

In three States (Kentucky, Nebraska, and West Virginia) coverage is limited to one or more diseases contracted in certain employments.

The balance of the jurisdictions, 9 in all, follow the second method of paying compensation, that is, the incorporation of blanket provisions in the laws to cover occupational dis-

[*Continued on page 38*]

PROGRESS IN Silicosis Control

By Robert Flint

THROUGH the combined efforts of industrial hygienists, the medical profession, industry, labor, liability insurance companies and governmental agencies, more progress has been made in controlling the hazard of industrial silicosis in the last ten years than in any previous ten or twenty-five year period.

What is the significance of this achievement to American industry? First, it means lowered production costs, compensation payments and insurance costs. Second, it means more efficient operations and more favorable industrial relations. However, this does not mean that silicosis no longer exists as an occupational hazard. On the contrary, this advancement challenges all to continue to seek more reliable and accurate information on the subject; to take greater precautions in protecting employees; to put into practical operation the knowledge unearthed in research laboratories, working toward greater control and prevention.

Fortunately, we have passed through the period of hysteria which only a few years ago threatened to cause more damage to the progress of industrial health than silicosis itself. The silver lining in that dark cloud was that it focused attention on the silicosis hazard and stimulated efforts to prevent the disease. Since that time, studied research by competent author-

Open-air jackhammer drilling with and without dust control. Control unit is dust trap, with exhaust line, fitted directly over drill.

Photos courtesy Kadco Corporation and Metropolitan Life Insurance Company.

ities has resulted in the disclosure of reliable data and generally accepted facts concerning silicosis.

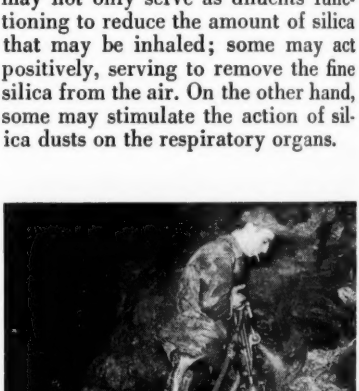
Known Characteristics

At the present time the following characteristics of silicosis are accepted as reliable information:

1. Definition—Silicosis is a chronic disease of the lungs caused by the breathing of air containing silica (SiO_2). Only silicon dioxide, in its free state, is known to cause silicosis.
2. Safe Concentrations—Even with the most siliceous dusts, dust concentrations of less than 5,000,000 particles per cubic foot of air are considered safe.
3. Presence—Silicosis may be a hazard in a dusty occupation if the dust contains more than 35% free silica.
4. Exposure—Reliable data indicates that a period of from five to seven years exposure is necessary to produce nodular fibrosis.
5. Cure—There is no known cure for silicosis.
6. Size of particles—It is generally agreed that the harmful particles of dust in the air are those less than 10 microns in their greatest dimension.
7. Prevention—there are three measures which should be taken to prevent silicosis: first, controlling the creation of silica dust; second, prevention of dispersion into the atmosphere; third, use of personal protective equipment, such as respirators.

One of the most significant contributions to the solution of the problem in recent time is the possibility of mixing inert dusts with quartz dusts. Dr. Leroy U. Gardner, Director of Saranac Laboratory, discussed the possibilities of this method before a recent meeting of the Air Hygiene Foundation. He described studies which showed that the mixing of inert metallic dusts (metallic aluminum and hydroxides of aluminum and iron) with quartz dust tended to hamper incidence of silicosis. These studies open up another control aspect.

It is possible that these adulterant dusts, in association with silica dusts, may not only serve as diluents functioning to reduce the amount of silica that may be inhaled; some may act positively, serving to remove the fine silica from the air. On the other hand, some may stimulate the action of silica dusts on the respiratory organs.



With neither respirator nor dust trap protection, a miner is wide open to a silicosis attack.

Prevention of Silicosis

Of primary importance to industrial management, as well as the major objective of every individual or group working in this field, is the elimination of silica dust from the air, and the protection of workmen exposed. Certain general principles and rules, applicable to all industrial operations, can be stated. However, it should be made clear that because of the peculiar nature of different sources of silicon dioxide, and of different operations, more specific regulations should be followed in the various industries. It is the purpose of this article to cover only the more general preventive measures. It is understood that control measures in specific industries will be discussed in future articles in OCCUPATIONAL HAZARDS & SAFETY.

Preliminary to a discussion of general control measures, let us look briefly into some of the industries in which silica may be the main constituent of the dusts created in the operations involved. Among the major industrial processes are: metal and anthracite coal mining; quarrying; manufacture of refractory materials and silica abrasives; construction; foundries; metal manufacture; pottery manufacture; glass manufacture. Silicon dioxide in various forms may be found in different processes in each of these groups. Some operations may be more hazardous than others due to the nature of the equipment used in working with the siliceous material. Each operation should be studied independently and control measures taken accordingly. There are many different factors to consider in making a survey for silicosis control on any given operation. Only qualified engineers should be employed to make such a study.

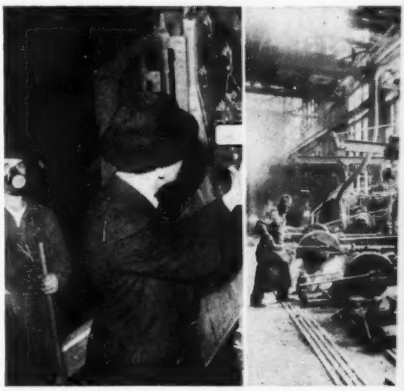
Good Housekeeping

As is true in the control of any industrial health hazard, cleanliness and good housekeeping are of primary importance. Control measures and protective equipment may prove futile without good housekeeping practices. These practices include instructing workmen to perform their duties properly in order to prevent the creation of excessive amounts of dusts; and the removal of dust from equipment, floors, walls, ceilings and other interior parts of the building, preferably with vacuum cleaning methods which have the advantage of removing the dust without dispersing it into the atmosphere.

Ventilation and Dust Collection

It is difficult to set any hard and fast rule for ventilation. In some cases it may be possible to create a natural draft ventilation. However, the intro-

Left: Testing efficiency of exhaust hooding on sand vibrator in glass factory. Right: Exhaust ventilation of foundry swing grinders.



duction of large volumes of air by means of mechanical ventilating systems, including fans, blowers and similar equipment may be necessary. Here again it should be stressed that the nature of the industrial process will dictate the most effective type of ventilating equipment, where fans, motors, and ducts should be located for maximum safety and dust removal.

The use of localized exhaust ventilation is probably the most effective method of dust control. Removing the dust at the point of origin and collection of the dust after it has been drawn into the hood are the primary functions of an exhaust system. Many operations may be almost completely enclosed, and exhaust ventilation applied to inside of the enclosure. Engineering surveys by competent persons should be made to determine the type of exhaust system needed, the size of hoods, location of pipes, filters and arresters, source of suction and other factors necessary for efficient operation. Dust counts should be taken regularly to see that the system is functioning properly and that proper air velocities are being maintained. All equipment should be inspected and serviced regularly to prevent deterioration or failure.

Perhaps a word should be said about local exhaust and ventilation in rock drilling. Effective control may be secured by means of a dust trap surrounding the drill at the surface of the rock. By means of this trap the dusty air is captured at its source and conveyed by airline to a discharge point well removed from the workers.

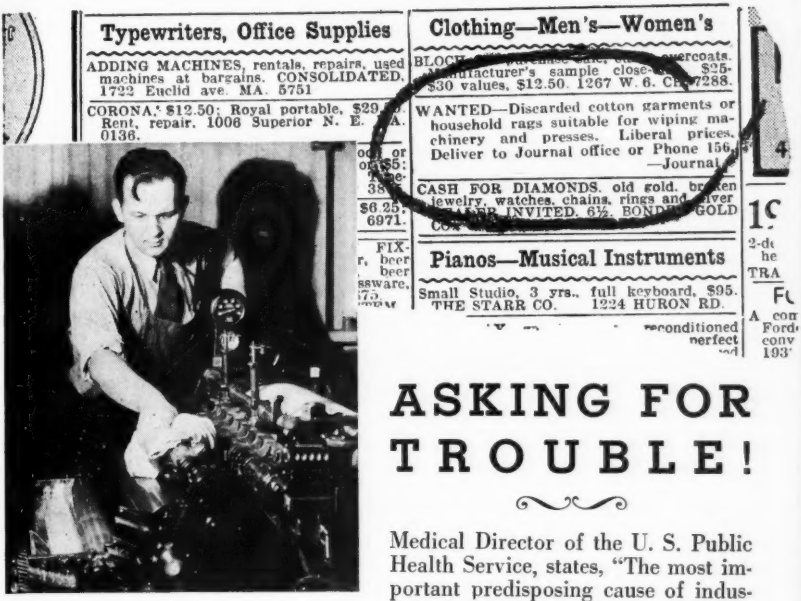
Personal Protective Equipment

Respirators and masks have a legitimate place in the control of the silicosis hazard. However, these should not be considered as substitutes for exhaust ventilation systems. They are, on the other hand, practicable means of protecting workmen in particularly dusty operations and at times when employees must work in particularly dusty atmospheres. Respirators are an immediately available means of dealing with a dust hazard.

The three general classifications of respirators are: supplied-air respirators; supplied-oxygen respirators; air-purifying respirators. The basis of judging the suitability of a respirator is whether or not the amount of dust that escapes through the filter under practical use is below the amount that would be harmful to breathe. The supplied-air respirator, or positive-pressure respirator, secures its air supply from the compressed air source used in the performance of the work, as in sand blasting, pneumatic drilling and spray painting. Blowers or pumps, in which the air does not come in contact with any foreign substance that may be harmful or objectionable, may be applied to supply air for these respirators. The various types of supplied-air respirators are commonly known as hose masks, air-line respirators and abrasive blasting respirators. The abrasive blasting respirators have a face-piece or head-piece designed to protect the wearer's head from abrasion by particles of sand or grit.

Personal respiratory protective devices must be maintained in perfect working condition and kept clean and sterile. Otherwise, they do not serve with either efficiency or comfort.

Industrial management may look forward in this year and succeeding years to further progress being made in the field of silicosis control. Doubtless the most notable accomplishments will be in devising improved and new methods of dust suppression.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ADDING MACHINES, rentals, repairs, used machines at bargains. CONSOLIDATED. 1722 Euclid ave. MA. 5751
CORONA; $12.50; Royal portable, $29. Rent, repair. 1006 Superior N. E. A. 0136.
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WANTED—Discarded cotton garments or household rags suitable for wiping machinery and presses. Liberal prices. Deliver to Journal office or Phone 156. —Journal
CASH FOR DIAMONDS. old gold. broken jewelry, watches, chains, rings and silver INVITED. 6½. BOND GOLD
Pianos—Musical Instruments
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ASKING FOR TROUBLE!

By E. D. Szold
Executive Director
Sanitary Institute of America

THE above classified ad was clipped recently from the classified section of the only newspaper of a city of some 9,000 population. It reads exactly as published, except for the deletion of the city name. This is by no means an isolated case. Hundreds of ads for old rags, to be used in wiping and cleaning machinery, are annually run by a variety of plants.

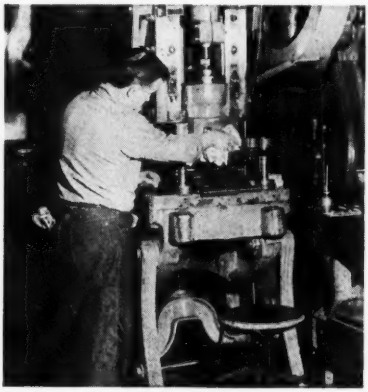
It has been reliably estimated that the annual bill for occupational dermatoses in the United States is approximately four million dollars. Sixty-six per cent of compensation claims for occupational diseases are for dermatoses. Dr. Louis Schwartz, Medical Director of the U. S. Public Health Service, states, "The most important predisposing cause of industrial dermatitis is, to my mind, the lack of cleanliness." Consider the above figures—Dr. Schwartz' statement—the classified ad—and you realize the tremendous job which faces American industry in reducing the cost of industrial dermatoses. One of the most flagrant abuses in industry and most important causes of industrial dermatoses is the use of unsanitary industrial wiping materials.

Today only two states, Ohio and California, have state laws specifically prohibiting the sale of unsterilized cloths for industrial use. In the other 46 states no statute prevents an employer from furnishing his workers with unsanitary wiping materials. Thus classified ads, such as appears above, can be found in the daily newspapers, and many are published by peddlers to obtain wiping rags for

re-sale among industrial concerns. In the end, it is American industry which is paying the bill for such unsanitary wiping materials. They pay in the form of lost time, inefficient production, doctor bills and compensation payments.

Because wiping rags are used in every major industry, and because there often is no satisfactory means of accurately tracing a dermatitis infection to its source, no reliable figures can be given concerning the number of dermatitis cases directly resulting from contaminated wiping materials. The difficulty of securing statistics in this connection has been well epitomized in a statement by a Michigan judge. In upholding an award for compensation, where a workman had contracted an infection, the court stated, "Of course, no one can testify that he saw a germ—germs cannot be traced in their individual wanderings, like persons, and the most that can be done is to tell the condition that will render the infection probable or possible." Subjecting unsterilized wiping materials to this test, let us analyze them to see what in their condition "would render infection probable or possible."

Punch press and machine shop operators, benefit from the use of germ-free wiping cloths.



"Occupation and Health" published by the International Labor Office carries this statement, "Rags are obtained from the most various sources and may have been used for a large number of purposes. The dust which arises from them may contain mineral elements such as sand and glass, vegetable fibre (cotton, flax, wood, etc.) animal fibre (wool, hair, etc.), and living bodies such as bacteria and mildew, which may cause putrefaction or more rarely disease (smallpox, tuberculosis, typhoid fever, diptheria, erysipelas and occasionally plague, cholera, etc.) or parasitic diseases."

In an analysis by Semenow of eighteen samples of rags, "he found in certain samples, tuberculosis bacilli, mould, actynomices, particles of organic and inorganic dust, the formerly chiefly consisting of quartzic sand."

Tests conducted by the National Pathological Laboratories at the request of the Chicago Better Business Bureau, revealed the following:

"Count of bacteria in unwashed wipers (10 sq. cm.) approximately one million.

"Count of bacteria in washed and sterilized sample (10 sq. cm.)—none. The predominating type of organism found was staphylococcus often responsible for boils, acne, and many other skin infections."

In bacteriological tests conducted by the American Institute of Laundering, it was found that worn garments include not only the staphylococci responsible for boils and skin diseases,

but also streptococci of nose and throat origin and some fecal bacteria. Such cloths are potential carriers of the respiratory and communicable social diseases.

In view of these analyses, if lack of cleanliness is an important predisposing factor in infection, certainly the unsterilized wiping cloth has no proper place in industry.

A distinction should be made with respect to the hazard inherent in bales of rags which have been stored for a considerable time as contrasted with such rags as might be sold direct from a household in response to the ad reprinted with this article. In the case of stored bales one authority states, "It would appear from the study of statistics that apart from anthrax and erysipelas, infectious diseases contracted are more or less rare, since the infective agents lose their virulence by desiccation (drying up) when the bales of rags are stored for a long period of time without being opened." Conversely, household rags sold directly to a small factory would constitute a more serious hazard with respect to those diseases whose infective agents become less virulent by a process of desiccation.

In this connection, it should be observed, however, that whereas desiccation may reduce certain infection hazards, it tends greatly to increase the dust content. Increased dust content where that content includes bacteria described in the analyses above, one must expect an increased hazard with respect to the respiratory or pulmonary diseases. To quote once again from "Occupation and Health"—"Where a factory utilizes rags, steps must be taken to prevent the danger of infection proceeding from the dust raised during manipulation or storage of these. In an inquiry covering eighty establishments, the Massachusetts Board of Health ascertained the

Preparation of sanitary industrial wiping cloths in special steam and sterilizing vats.

Sanitary wiping cloths fill a marked need in printing, power and similar type plants.

fact that where clean rags are used, very little dust is developed."

Today large industrial users of wiping cloths almost invariably requisition *sterilized* wiping rags. It is for the most part the small factory, printer, newspaper, or automobile shop which still uses unsanitary wiping materials. It is chiefly in this field that education is still necessary. Granting that a user wants sterilized, sanitary wiping materials, how may he be sure that the cloths he needs are free from an infection hazard?

EASILY enough—never buy them other than from a reliable firm—a firm who is willing to give you an affidavit with every shipment to the effect that the wipers are sterilized. Definite minimum standards for such sterilization have been promulgated by the Sanitary Institute of America and are now generally accepted by the entire wiping cloth industry. Members of the Institute give a sworn affidavit with each shipment of wiping cloths. This affidavit attests to the fact that the cloths have been sterilized by boiling in a solution of pure soap—76% caustic and/or chloride of lime and dried at an average temperature of more than 212° Fahrenheit. Penalty for failure to live up to these standards is expulsion from the Institute. The employer who in purchasing wiping cloths demands a product processed according to Institute specifications has taken one important step toward minimizing his infection hazards.

Dirty cloths only wipe away profits, for lost time, doctor bills and compensation payments are costly. Clean, sanitary waste materials assure employers of maximum protection against costly dermatoses and infections. It pays to use them.

Industrial Health Meet Draws 300 to Chicago

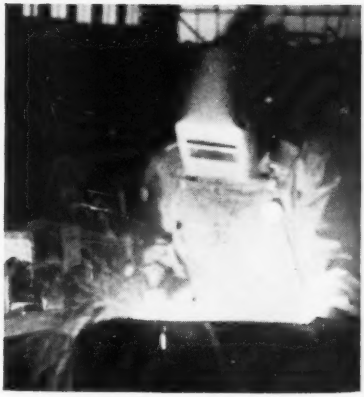
The First Annual Congress on Industrial Health was held in Chicago, January 9-10, under the auspices of the American Medical Association and with an attendance of 300.

Among the subjects discussed at the two-day meeting were the relationship of the industrial physician with the employer, the employee, the public and the private practitioner; uniformity in workmen's compensation procedure; cooperation between insurance and industrial physicians; federal, state, local and private programs with relation to industrial health; and medical service to small plants.

While almost every speaker stressed the present lack of and need for preventive measures and medical service in smaller establishments, the subject was the basis for a symposium by Dr. Donald M. Shafer, Consultant, Committee on Healthful Working Conditions, National Association of Manufacturers, Dr. Carey P. McCord of Detroit, Dr. Glenn S. Everts, Philadelphia, and Dr. L. D. Bristol, Health Director of American Telephone and Telegraph. These four speakers emphasized the fact that some 15,000,000 workers (involving approximately 75,000,000 dependents) were employed in plants of less than 500 employees, and it is in these plants that the greatest need for healthful working conditions and control and preventive measures exists. Dr. Shafer stated that in the survey recently completed by the N.A.M. it was brought out that 42% of the workers were exposed to occupational injuries, and that this figure corresponds to the number of compensation payment cases brought before compensation boards.

Among the other speakers were: Dr. Irvin Abell, President, American Medical Association; Dr. C. D. Selby, Detroit; Dr. R. L. Sensenich, American Medical Association; Dr. Loyal A. Shoudy, Bethlehem Steel Co.; Daniel Harrington, U. S. Bureau of Mines; Dr. Warren F. Draper, U. S. Public Health Service; Dr. W. J. McConnell, American Public Health Association; Mr. Ambrose Kelly, American Mutual Alliance; Dr. A. D. Lazenby, Baltimore; Dr. Stanley J. Seeger, Chairman, Council on Industrial Health, A.M.A.. Dr. Harry Mock, Chicago. Dr. Alice Hamilton of the U. S. Dept. of Public Health and Mr. Voyta Wrabetz of the Wisconsin Industrial Commission.

You Get What You Pay For



In Protection Equipment

IN MANY plants there are special display cases containing goggles with shattered lenses; helmets with dented tops; shoes, the leather cut and battered; tattered gloves; and other equipment worn and torn. Peculiar trophies, yes. But employees and employers alike are proud of them. Each piece of equipment represents the saving of some part of the body, the protection of limb or life, and the saving of hundreds or thousands of dollars. Behind each one is a story of the greatest human interest—a story of a husband, father and wage-earner saved for his family—a story of saved eyesight, fingers and toes—a story of efficient and economical industrial operations. These trophies are eloquent testimony of the usefulness and value of personal protection for occupational health and safety.

What should determine the type of protective equipment to be worn? When should such equipment be used? Where should safety equipment be worn? Why wear personal protective devices?

These questions concern management directly. The answers to them will aid in reducing time loss and subsequent loss of producing power; in reducing medical costs, insurance rates and compensation payments.

By CHESTER N. LAWRENCE

Combating safety and health hazards with personal protection equipment is effective only if the equipment itself is effective and only if it is properly chosen and used in light of specific hazards for which it was designed.

Spray painting in exhausted booth, plus use of respirator. Below: Tow and lift truck operation removes some hazards and creates others—safety shoes meet the latter.

Photos courtesy Sherwin-Williams and Towmotor Cos.

Carefully selected protective devices and clothing are money well spent—otherwise just money poured in a rat hole.

Type of Equipment Needed

The nature of the operation being performed and the materials being handled should determine the type of equipment required. Another factor which enters into this determination is the extent to which mechanical and engineering controls have been installed. The more control measures there are, particularly with reference to dusts and fumes, the less general the need for individual protective devices.

Abrasive, chipping, grinding, sanding and similar operations demand that operators and others who may work or be in the vicinity of the operation wear goggles. Welders, operators at furnaces, kilns and similar places where light rays present a hazard require goggles which reduce the brilliancy of the arc of flame and filter out injurious light rays.

Today, there are different types of goggles available for protection against dust, flying objects, splashes of corrosive liquids and injurious light rays. There are also goggles which may be worn over spectacles.

Compounds which prevent fogging, steaming and frosting of lenses are now available and should be applied to lenses whenever such conditions exist.

Safety Shoes

Twenty-four per cent of compensation cases for occupational injuries are for injuries to feet and legs. The obvious answer to a reduction in this type of injury is protective foot and leg wear. Where heavy materials are handled, safcty shoes with reinforced toes have saved the loss of many toes. The development of protective footwear has reached the point where the shoes not only give maximum protection, but are comfortable to wear and neat in appearance. Extra protection in the form of metal toe and foot guards should be worn where unusually heavy materials are handled. Wooden sole shoes, rubber boots and shoes with wooden soles and rubber uppers may be found valuable under special conditions when workers are handling acids or where excessive moisture or heat conditions prevail. Shoes for safety should be selected on

the basis of the specific hazards the wearers will encounter.

Leggings, spats and/or aprons are needed for certain operations at all times, and for special occasions in others. Where acids, hot water and alkalis are used, these items serve best when made of rubber. Rubber leggings are recommended. Chrome tanned leather ones best provide protection from exposure to splashes of molten metal and sparks. In more severe heat conditions, asbestos goods may be necessary.

Injuries to Hands

An interesting study has recently been completed in the South African mines with reference to hand injuries. It was found that 64% of the hand injuries were those of the back of the hand and 36% of the palm. Fifteen per cent of all hand injuries were injuries to the thumb. Gauntlets, gloves and mittens, with special protective features for the entire hand, one or more fingers and thumbs, are available. Where a worker, due to the peculiar nature of the operation, cannot wear an overall glove it may be possible that a specific type of glove would provide adequate protection and could be worn with ease.

Head Hazards

Just to look at a safety hat or helmet which is dented or smashed starts one thinking about what would have been the result "IF." While a lesser per cent of injuries may be head injuries, the potential seriousness of head blows make them major hazards. Many plants utilize helmets and hard hats as standard equipment. They are made today of strong, lightweight materials to stand hard blows and yet be comfortable. Workmen often find that there is little difference between helmets and their "old felt hats."

Some companies have a standing rule which requires workmen to at all times wear their goggles, helmets, safety shoes or whatever pieces of protective equipment prevalent hazards in their operations may dictate. Other plants require them only on certain operations and for certain types of workers. Management must lay down the rules in the matter. The discretion of workers cannot be trusted.

UP-TO-THE-MINUTE PROTECTION

★ *and mighty comfortable, too...*

THAT'S what workmen everywhere are saying when given an opportunity to wear the *No. 30X Face Shield.* The shield of a thousand uses, it provides ideal protection for such costly lens-replacement operations as spot-flash or gun welding. *Metal just does not adhere to it!* Can be worn with or without spectacles with equal comfort. Available with Clear, Amber or Green Plastacele Fronts—or with Wire Screen Mesh, as desired.

Place Your Order Today
Everything in Head and Face Protection.

THE BOYER-CAMPBELL CO.
DETROIT, MICHIGAN

This month in *Washington*

By W. T. CAMERON
Chief Safety Adviser, Division of Labor Standards, U. S. Department of Labor

THIS year will see a wave of legislative action, among both state and federal governments, to broaden health and safety laws and to revise present enactments for greater protection and more strict enforcement.

That is the governmental outlook for 1939 with the opening of the Seventy-sixth Congress in Washington and the meeting of forty-four of the forty-eight state legislatures. From the standpoint of the federal government, of particular interest is the question of whether or not money will be diverted from the Social Security fund to aid in promoting industrial health and safety. The extent to which state industrial hygiene and safety bureaus will go in promulgating new regulations and enforcing present ones with stricter vigilance depends in part upon this question and the amount of monies which may be diverted to states for this purpose. When funds were furnished to state governments for the setting up of industrial hygiene bureaus under the National Security Act, increased activity in the various states was immediate.

It is too early at this writing to predict congressional action in this connection, but the various federal agencies, including the U. S. Public Health Service, the Bureau of Labor Standards, and the U. S. Bureau of Mines, are following this and other legislative questions with much interest and anticipation.

At least seven state legislatures will hear and consider special reports on occupational disease legislation which has been studied during the legislative recess period. According to information received from these states it appears that the number of states compensating for occupational diseases will pass the thirty mark this year.

Approximately sixteen state legislatures will consider amendments to workmen's compensation laws. These amendments will revise and bring up to date provisions which have become out-dated due to technical improvements in materials and processes. Re-

cent studies reveal the fact that while workmen's compensation laws are the oldest of major social legislation, actually not more than half the workers enjoy the protection of these laws. One of the reasons for this is that many of the state acts are elective rather than compulsory. Another is the general prevailing practice of exempting particular industries as well as establishments with certain numbers of employees. In some instances these numerical exceptions run as high as ten, and in one state sixteen. It is probable, taking all things into consideration, that this condition will be changed to bring more workers under compensation benefits for injuries to body and health. The tenor of reports from the various states indicates a definite desire on the part of state legislatures to broaden the scope of compensation benefits.

A number of states will consider passage of a basic safety and health law investing in the labor department or industrial commission the power to establish minimum standards through industrial health and safety codes, empowering such an agency to enter places of employment, and to tag or seal dangerous machinery and unsafe or unhealthy places of employment, and setting forth severe penalties for violation.

The expansion of present compensation legislation and the enactment of new laws are of particular interest and significance to industrial management. Any new laws will present no hardship for the progressive industrial organization, for these firms, both large and small, have already taken protective and preventive measures far beyond present legal requirements. These new laws will be based upon the self-same practices which have resulted in our finest no-accident records. In fact, new legislative enactments will do much to overcome the competitive advantage accorded the employer who is able to reject the compensation act; who does not have to pay for occupational diseases; who is permitted to operate his plant in a manner which jeopardizes the health and safety of his employees; and who in no way assumes his obligation to his workers and to the public.

IT HAS been said that industrial management need not fear legislative enactments for compensation of occupational injury and diseases. The only fear should be of the competitive advantages of plants which have seen the economic reasons for protecting the health and safety of employees and have taken voluntary steps to do so. These are the progressive plants, which realize the most efficient and economical operations, which have the most favorable employer-employee relations, and which realize the most profitable return on investments. It has also been stated that perhaps we should have two sets of safety and health codes; one for the plant which voluntarily establishes safe practices and installs health and safety equipment, another for the plant which must be forced to such steps.

THE SAFETY VALVE

[*Continued from page 2*]

this will be more efficient and economical production and decreased operating and maintenance costs in terms of lowered compensation payments and insurance rates. Secondly, it means that the industrial engineer, standing between the research man and management, has an increased responsibility in dealing with materials, methods and men.

THE engineer is in a particularly good position, with his training and knowledge, to diagnose and understand the potential health and safety hazards in new materials and processes, and to adopt techniques which will eliminate or reduce to a minimum the possibility of occupational accidents and diseases. The engineer of today must recognize this as a part of his job. Furthermore, he must anticipate the direction in which research is advancing in order that he may be equipped to do his part in translating these into desirable goods and services.

In a letter addressed to the heads of more than 100 schools and colleges in the United States, President Roosevelt suggested that the college curriculum be so balanced "as to give coming generations of engineers the vision and flexible technical equipment necessary to meet the full range of engineering responsibility."

There are many opportunities in industrial organizations where men with a broad engineering training and experience can do much to improve the health and safety and morale in these organizations.

It is interesting to learn that at the recent annual meeting of the American Association for the Advancement of Science, a group of younger scientists organized the Association of Scientific Workers. While this new movement is not to be interpreted as a revolt, it does indicate the promotion of a more practical relationship between scientific achievement and its effect upon men and women employed in industry.

Safety Meetings Scheduled

FEBRUARY 16-17—Jackson, Miss.

Southern Safety Congress. Genl. Chairman, Sam J. Dalton, State Highway Department, Jackson, Miss.

FEBRUARY 23-24—Newark, N.J.

Fifteenth Annual Eastern Safety Conference. Secretary-Manager, Fred M. Rosseland, Newark Safety Council, 24 Branford Place, Newark, N.J.

MARCH 27-29—New York

Tenth Annual Greater New York Safety Conference. W. Dent Smith, Executive Vice-President, Greater New York Safety Council, Inc., 60 East 42nd Street, New York City.

APRIL 3-4—Boston, Mass.

Eighteenth Annual Massachusetts Safety Conference. Ralph W. Pendleton, Massachusetts Safety Council, 80 Federal Street, Boston, Mass.

APRIL 18-20—Columbus, Ohio

Tenth All-Ohio Safety Congress. Thomas P. Kearns, Superintendent, Division of Safety and Hygiene, Ohio Industrial Commission, State Office Building, Columbus, Ohio.

Healthier Working Conditions For Employees

In a talk which he delivered recently, Sylvester W. Kirk, president of the Kirk & Blum Mfg. Co., pointed out that industrial employees today are offered more healthful and safer working conditions than ever before. He said: "The reason is obvious. Safety measures and numerous protective devices—such as dust removal systems, guards, respirators, safety shoes, and goggles, eliminate layoffs which are costly to both employees and the manufacturer. Furthermore, the installation of safety devices also results in lower insurance rates for the employer."

Right off the Docket

The trend of litigation on workmen's health and accident compensation is reflected in these briefs of the latest and most representative cases coming to trial in the intervals between issues of this magazine. Familiarity with this trend is important to every industrialist.

Cerebral Thrombosis—Sufficiency of Notice

AN appeal was made from an award in favor of the claimant, for permanent total disability as the result of a paralysis of the left hand, arm and side. The claimant was engaged in polishing a piece of glass 24 inches wide, 30 inches long, and 1 inch thick. During the process the glass suddenly slipped. The claimant saved it from falling, but as he did so experienced a sensation which he described as: "Like a fire came into my head and all over my face, and I felt my hand get numb." He finished the work and then told the foreman he felt sick, that his head, face and hand hurt. The foreman suggested he take smaller work, but he was unable to do so, and went home. He never reported back to work.

The company opposed the award, claiming that there was insufficient notice, and that there was no evidence of an accident in the course of employment.

In affirming the award, the court held: The foreman knew the injured man's name, and was told the facts of the accident. This "actual knowledge" of the foreman, under the circumstances, was the equivalent of notice under the Workman's Compensation Act. As to the accident, there was some medical testimony that the claimant suffered a cerebral thrombosis resulting in paralysis, and that the effort in lifting the glass, or in saving the slipping glass from falling, was sufficient to cause it. This evidence, the court said, was enough to warrant the finding and compensation. *Uditsky vs. Krakovitz, 2 Atlantic 2nd 525—Pennsylvania—Nov. 1938.*

Commission Enlarges Award Upon Review

The plaintiff while working as a punch press operator suffered an injury which resulted in the loss of both his thumbs, his first and second fingers of the right hand at the second joints, and his first, second and third of the left hand at the middle joints. His right third finger was badly lacerated.

An award first was made for a period of 270 weeks, that being the period allowed according to the schedules of the compensation statute covering the loss of 2 thumbs, 2 first fingers, 2 second fingers and a third finger.

Upon review, the Commission held that the plaintiff had lost the "industrial use of both his hands" and should be awarded compensation for total permanent disability, as though he had lost both hands, which would be for a maximum period of 500 weeks. The Court sustained the Commission's holding, but said the order should read, "compensation from the date of the injury, until further order." This was done in order to meet the possibility that the plaintiff might regain some industrial use of his hands. *Rench vs. Kalamazoo Stove & Furnace Co., 282 N.W. 162—Michigan—Nov. 1938.*

Digested and compiled by
HILTON E. ROBERTS
Member Ohio and New York Bars

CESCO devotes their efforts entirely to head and eye protection equipment. That's one reason why our line of goggles, spectacles, masks, respirators and shields are preferred. They provide maximum protection with wearer comfort.

Send for new catalog just off the press.

CHICAGO EYE SHIELD CO.
2300 Warren Blvd. Chicago, Ill.

Evidence Held Sufficient to Sustain Award for Traumatic Pneumonia

To adjust the bumper arms at the bottom of a furnace, the plaintiff pushed them with a rake. They were stuck, and the rake handle slipped through the plaintiff's hands and struck him on the chest. Pneumonia developed which he claimed resulted from the blow. The defendant denied the plaintiff suffered an accidental injury and contended the pneumonia resulted from a prior case of influenza.

The plaintiff's doctors admitted they had never before treated a case of traumatic pneumonia, but averred that it was known to the medical profession and quoted from various medical books in support of their diagnosis.

On appeal, the Commission's award was sustained. The court stated: "So long as there is evidence supporting the finding of a causal connection between the injury and the subsequent pneumonia, we may not disturb such finding." *McLean vs. Eaton Mfg Co., 282 N.W. 150—Michigan—Nov. 1938.*

Hernia as the Result of Unusual Exertion

In a recent North Carolina decision, the court stated: "Evidence that the plumbing foreman was required to lift pipe of a type and weight he had never lifted before because of other employees discharge, and that the lifting thereof was immediately followed by injury resulting in hernia, sufficiently showed interruption of routine of his work and introduction of unusual conditions likely to result in unexpected consequences justifving Industrial Commission's finding that injury was result of accident." *Moore vs. Engineering & Sales Co., et al., 199 S.E. 605—North Carolina—Nov. 1938.*

Heat Exhaustion Compensated

Heat exhaustion suffered by an employee, who was engaged in wrenching rods on the derrick floor of an oil well, was held to be an "accidental injury" arising out of and in course of employment" within meaning of the Compensation Act.

The court discussed the scope of the Act, stating: "The benefits provided for an injured workman by the Compensation Act are not confined to cases involving traumatic injury, but extend to any injury, such as heat exhaustion or sunstroke, which may be properly classified as accidental, and which is sustained in an employment and under conditions included in and covered by the provisions of the Compensation Act." *Gulf Oil Corporation vs. Garrison, 84 Pacific 2nd 12—Oklahoma—Nov. 1938.*

Eye Injury

A grinder in a metal finishing plant in Louisville had a few minutes spare time in which he was arranging some tools and materials preparatory to finishing some castings. He had removed his goggles dur-

[*Continued on page 40*]

By BRADLEY BAINES

NEITHER a strike nor a lock-out must be resorted to for to eliminate one of the most dangerous enemies to labor and capital," declares a California health official. "The common use of drinking cups, tins, and canteens, by workers in industry is responsible to a large degree for the distribution of typhoid, syphilis, pneumonia, common colds and a score of other communicable diseases which are decimating the ranks of labor with sickness, inefficiency and general economic depression."

The truth of this statement is borne out by facts and figures which present a direct challenge to industry to take adequate measures to eliminate the lost time and decreased profits which result from sickness among workers. Among the principal causes of disabling sickness among industrial workers are the respiratory diseases. These include influenza, colds, bronchitis, pneumonia and many others.

According to the U. S. Public Health Service, studies of 146,474 industrial workers showed a sickness rate due to respiratory diseases as averaging 30.8% per thousand men in the five year period of 1932 to 1936. In 1936 and 1937 the figures were 33.3 and 40.5% respectively, appreciable increases. The rate for the first half of 1938 dropped to 30.7%.

One authority has estimated the cost of respiratory illness in terms of wages. "Assuming that the average daily wage is about $4.00," he says, "the yearly loss of wages, due to absence from work resulting from diseases of the upper respiratory tract, if distributed evenly, would be $6.00 per person per year. It is estimated that there are 42 million gainfully occupied persons in the United States. Multiplying this figure by $6.00 gives a total wage loss of approximately 250 million dollars suffered annually from upper respiratory ailments."

Industrial hygienists and health officials agree that there is a definite relation between the fact that the common drinking cup, glass, or water bucket and dipper is still available to industrial employees, and the fact that respiratory diseases are saliva borne. Many large and small concerns have solved this problem by supplying their workers with single-service drinking cups, or by the installation of sanitary drinking fountains.

WITH individual paper cups the chances of "salivary exchange" are virtually nil, and the same is true of properly designed drinking fountains. Specifications for drinking fountains, as outlined by the American Public Health Association, and seconded by the U. S. Public Health Service require, among other things, that the outlet pipe must be so placed that it cannot be touched by the lips; the jet of water must be slanting and must not fall back into the pipe or hole from which it issues; an overflow must be provided which makes flooding of the fountain bowl impossible; and must have a guard which prevents the lips of the drinker from touching the water outlet.

Both private and public contractors have adopted measures designed to insure their employees of safe drinking facilities. In New York state, organized labor is behind a bill that will require contractors to provide pure drinking water and paper drinking cups for their workers. Many states, in their industrial sanitary codes, provide for sanitary drinking facilities for industrial employees placed within easy reach of each worker and in number proportionate to the number of workers. The effect of these regulations is to decrease communicable respiratory diseases in industry and to reduce to a minimum the possibility of lost time and inefficient production due to disabling sickness.

Respiratory diseases are saliva-borne diseases and from them industry suffers heavily in terms of decreased man power, reduced efficiency, and lowered morale. Sanitary drinking facilities are a definite means of combating the inroads of respiratory diseases simply and economically. Many plants which do not have materials or processes which are health hazards nevertheless suffer from bad lost-time records. This is due to a great deal of illness among their employees from the so-called "non-occupational" diseases. The common cold is one of the most notable reasons for disabling illness. In an effort to reduce these lost time cases, some plants have made a careful check-up to find the cause. In many cases it was found that the drinking water facilities were not completely sanitary and that it was possible for germs to spread from one worker to another by means of a common drinking vessel or an unclean drinking fountain. The installation of more sanitary facilities immediately removed this hazard and the results were reflected in employee attendance.

While the question of sanitary drinking facilities may seem on the surface a minor point in the whole field of industrial health, the toll which the communicable diseases, the source of which may well be unsanitary drinking facilities, cannot be ignored. It is heavy. And one way to reduce it, and at the same time reduce absenteeism and increase production efficiency and profits, is to provide all types of workers with sanitary drinking facilities.

Hazards In Electroplating

[*Continued from page 12*]

a common duct. The air velocity at the face of the slots should be about 2,000 feet per minute. Wide tanks should have slots on both sides. The level of the plating solution should be from 4″ to 8″ below the top of the tank, and the duct should be at the top of the tank. To be effective, the duct should not be required to draw the air lateral distances of more than 18″. Proper fume removal, along with the use of a mechanical filter respirator by the operator, approved for protection against the mists of chromic acid, provide maximum protection.

Lacquer Hazards

Finished coats on many types of plated work consist of an application of lacquer or enamel. These finishes vary in composition, but many of the bases and solvents are inflammable, as well as injurious to the lungs. In no case should lacquer be applied except under a hood with strong draft ventilation. The lacquer department should be a unit separated from the rest of the plant by fireproof doors and walls. Open flames in those rooms should be prohibited. All lacquer should be stored in fireproof sections separate from the rest of the plant.

The problem of toxicity of lacquer is complex because the use of new substances and new methods of application complicate determination of the hazardous materials contained in an unfamiliar lacquer. Therefore, it is most important that the composition of the lacquer be known.

Adequate ventilation is the most effective means of control of health hazards, and minimize fire risks. Hose or pressure type masks should be used in addition to ventilation, but these are not substitutes for adequate exhaust equipment. The installation of paint spray booths, in which lacquer spraying operations may be conducted, will greatly reduce dangers.

Conclusions

The hazards in the metal finishing plant—mechanical, dust, chemical, mists and vapors, and fire—can be controlled and eliminated at costs wholly commensurate with the benefits.

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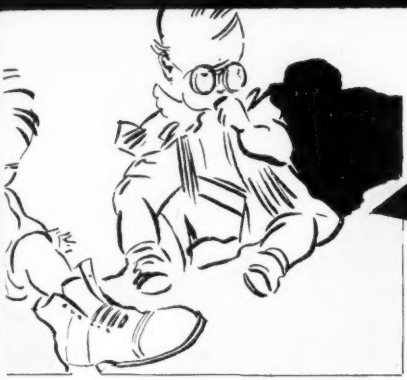

New Produc

WELDING HOSE

A NEW welding hose, designed to convey oxygen and acetylene for welding and cutting work, has been announced by the Hewitt Rubber Corp. This new hose consists of two lines of unusually flexible cord-reinforced welding hose molded into a single unit that will not kink or writhe, or twist under high pressure.

The individual passages have an inner lining of non-blooming gas-resisting compound that is cord-reinforced. The creases are designed to resist pressure many times greater than those incident in welding service. It is claimed that this new Twinweld hose eliminates masses of sprawling hose which make for considerable inconvenience and create definite hazards.

Installation is made by splitting the hose along the joint line at each end a sufficient distance to make connections. Ferrules are crimped to prevent separation of hoses.

LOCKLITE LIGHTING UNIT

A new "locklite" principle of attaching industrial reflectors, to speed installation, reduce maintenance and provide greater

safety with interchangeability of reflector units, is announced by the Lighting Division of Westinghouse Electric and Mfg. Co.

With this new electrical and mechanical disconnecting device, it is impossible to light the lamp until the reflector is properly locked into place. Each "locklite" unit consists of two parts: a receptacle into which the reflector with lampholder fits and a hood. The "locklite" hood is installed

THE FIELD

permanently. The reflector with lampholder is attached only after all wiring and general installation work has been completed.

INDUSTRIAL LIFTERS

For a faster, safer method of handling sheet metals, sheet glass, and other products with a smooth, non-porous surface, the Bastian-Blessing Co. has placed on the market five new "Ever-ready Lifters."

These lifters incorporate giant rubber vacuum cups which are provided with automatic releases that work with the flick of the finger. All parts are sturdily constructed, fully tested and guaranteed by the manufacturer. The vacuum cups, the only parts subjected to wear, can be replaced in five minutes without use of special tools. The five models offered include 2 for light work, 2 for medium work and 1 for heavy lifting. The rubber of the cups is said to be specially treated to withstand oil, grease and other deteriorating agents.

RUBBER RESPIRATOR

H. S. Cover announces the manufacture of a new large capacity rubber respirator, known as Dupor No. 46. It is claimed that the soft rubber face-piece makes an air type fit on any shape face. Has a twin filter area of over 46 sq. in. Filters are of special felt and are adjustable, removable and easily replaced.

The respirator is of light weight construction, with the weight evenly distributed across the nose and mouth and at cheek locations. It is foldable to fit the pocket and built to withstand hard usage. A face cloth is provided for the comfort of the wearer, who can talk without difficulty.

According to the manufacturer, the respirator has been approved by the U. S. Bureau of Mines for type "A" or pneumonomonosis-producing lead dusts.

NEW TWIN-VIEW HELMET

The Chicago Eye Shield Company announces a new Twin-View helmet, featuring double vision without removal of the helmet. Instead of the usual single colored lens, there are really two lens, the upper part being the regular colored lens, and the lower one-half inch being a clear view lens. This clear view lens is placed behind a light-weight metal visor, which extends at a ninety degree angle about an inch beyond the clear lens.

The advantages claimed for this new helmet is that the wearer can secure a clear view of his work by merely tipping his head a fraction of an inch. It isn't necessary for him to remove the helmet or move it in order to see his work clearly. At the same time it provides the same eye protection as the ordinary single colored lens type of helmet.

SHIN GUARD

A new shin guard that can be worn with comfort either inside or outside of clothing has been announced by the Ellwood Safety Appliance Co. Each guard is made of fiber, formed to fit the shape of the leg. Freedom of leg and foot action is assured with maximum protection to the shins.

Three horizontal ribs are used for strength and rigidity. Four brass eyelets, two on each side of guard, are used to hold two straps for attaching the guard into position. At the top and bottom of each guard a molded sponge rubber pad is used between the inside of the guard and the wearer's clothing, acting as a shock absorber.

NEW FIRST AID DRESSING

Nu-Hesive Co-Hesive dressings, a new type of surgical dressing developed by Diadem, Inc., embody a new principle of wound protection.

The special gauze used in these dressings is impregnated with a non-absorbing material, forming small pockets or cells in the fabric. As the bandage is wound around an injury, successive layers or tiers of cells are formed. Instead of absorbing the exudations from the wound, these cells trap them to permit more rapid coagulation.

Nu-Hesive Dressings are accepted by the American Medical Association Council on Physical Therapy. The dressings adhere to themselves; are easily removed, not sticking to the hair or skin; and antiseptics can be applied directly through the dressing.

FOR WINTER COMFORT

A winter lining for Skullgards offering protection against wind, snow and rain is offered by Mine Safety Appliances Co. The lining is a two-piece assembly of heavy close-woven material, consisting of a standard-size skullcap and lined earlug section that may be quickly inserted in the hat or cap without alteration of size. Insertion or removal of lining may be made in a minute's time, due to the simple snap-fastener device.

AIR MOTOR MIXER

The Eclipse Air Brush Corp. announces the addition of a new mixer to its line of Pneumix air-motored agitators. New mixer is known as type "D."

The maker states that all the regular Pneumix features are retained in the new mixer and that it is absolutely safe in operation, free from splashes and sparks.

MODERN FACE SHIELD

An improved, light-weight, and unusually comfortably face shield is now being produced by the Boyer-Campbell Co. of Detroit. Among the shield's highlights as featured by the manufacturer is the fact that metal will not adhere to it—making it especially useful for such operations as spot, flash and gun welding. The shield is well ventilated, offers

unobstructed vision and is available with either clear, amber, or green glass fronts, and wire fronts as well, if desired. It is adaptable to a wide variety of industrial operations where eye and face protection is required. Glasses may be worn with it without any interference, and it is hinged to be raised or lowered at will.

LIGHT SAFETY LADDERS

The Aluminum Ladder Company, 144 Fifth Avenue, Tarentum, Pa., has recently developed a new warehouse, platform-type ladder which may be used industrially in many ways to speed up handling and storage of products on shelves and bins.

This new ladder, designated as solid-type No. 206, is made of 51 S. T. Alcoa aluminum and has a tensile strength of 48,000 pounds per sq. in. It only weighs 43 lbs., yet it will support a load of our one thousand pounds.

The bottom of the 66″ ladder illustrated measures 28″ by 22″, and the platform, 22″ by 22″, but many other sizes are available. It is said to be rust-proof, non-sparking and equipped with easy-rolling casters on the back of its legs.

PLASTICS IN SAFETY

Synthetic resins of the urea, phenol, acetate and other types—the chemical laboratory's greatest recent contribution to industry, have found as ready application in the field of safety as in any other. This has been principally for the insulation qualities of these plastics, but there have been many others of unique nature.

In the third annual plastics contest recently conducted by *Modern Plastics*, one of the industrial awards went to the Mine Safety Appliances Company for its new explosive carrier. This carrier is moulded of a special type of impact-resistant bakelite and was both designed and moulded in the winner's research department.

Resistance to heat and acids has been developed to a high degree in several of the newer plastics and as brittleness is diminished it may be expected that they will find a greatly broadened field of use in safety and health hazard equipment.

COMPENSATION LAWS

[*Continued from page 14*]

ease. The jurisdictions include—District of Columbia, Hawaii, Illinois, Indiana, Missouri, New York, Philippine Islands, the Federal Employees' Compensation Act, and the Longshoremen's and Harbor Workers' Compensation Act.

The "Blanket" Case

In only a little more than half of the jurisdictions that compensate for occupational diseases are employees protected against all occupational diseases. Considering the States without compensation laws, those that do not compensate for any occupational disease, and those that cover only certain diseases, it is evident that many thousands of workmen of this Nation are subjected to diseases of industry for which no compensation is paid. In view of this, many authorities believe it would be fairer, more just, logical, and advantageous to both employer and employee to cover diseases by the "blanket" method. In the treatment of the subject by Walter F. Dodd in his book, "Administration of Workmen's Compensation," reference is made to a pertinent observation by Mr. F. M. Wilcox, formerly chairman of the Industrial Commission of Wisconsin, who said: "Far from embodying the wealth of available information on disease hazards in industry, the schedules have served, rather as a means of giving protection only where forced to give it, and of denying it where there was no insistent demand at the moment for the additional listing. Additions to the schedule list have been conceded only after some individual case which has gone unprotected has been given such wide publicity that public indignation has been aroused to the point where amendment was forced." Continuing, Mr. Wilcox further observed that, "The story of the radium victims in New Jersey and of their experience under the 'occupational disease schedule' of the compensation law of that state illustrates the perfidy that lies back of the 'schedule' plan."

Who can say that an unknown chemical today may not be a human destroyer tomorrow? We live in a mechanical age, in which new inventions and chemical processes are continually being developed. A press dispatch from San Francisco of December 25, 1938, reveals that an exhibit at the forthcoming Golden Gate Exposition will show to the public that "the cause of cancer may lurk in about 40 innocent appearing chemicals." Interesting as is this dispatch, it further discloses that most of the chemicals exhibited are derivatives or impurities of coal tar and some types of paraffin. The advance in chemicals, the exhibit will show, has fostered an "industrial cancer" hazard. The recent discovery concerns the so-called "sterols"—a mysterious, active substance contained in the coal tar derivatives. It is reported that the "sterols" are distant relatives of alcohols, and not as yet fully understood.

Administrators of workmen's compensation laws have long agreed that a "blanket" law is far more preferable than the "list" system, liberal though it may seem in some instances. A resolution to this effect was approved as early as 1929 by the International Association of Industrial Accident Boards and Commissions. Other ex-

[*Continued on page 40*]

Questions and Answers

Individual answers are given to all questions on industrial health or accident matters. A few of the questions received from readers each month are published for their general interest.

Clear Vision

Three of our men in the grinding room have been complaining to their foreman that their goggles are clouding up, impeding their vision and causing them much loss of time and much trouble in continually removing them to clear the lenses. Can you suggest any method by which this handicap can be overcome? We realize the hazard of allowing these men to work without their goggles, yet, at the same time, we can sympathize with them.

R. N. K., Tulsa, Okla.

A compound may be purchased commercially which can be rubbed on the lenses to prevent them from steaming or becoming cloudy. This compound is effective for as long as six to eight hours, and does not obstruct the vision or blur objects.

Suction Cups

We use lifters with rubber suction cups to handle sheets of glass. Occasionally, one of these suction cups will give way endangering workmen. We have tried wetting the cups but that doesn't hold for any length of time. Is there any other way to better seal the cups?

H. R. L., Meadville, Pa.

If the cups continue to give way the safest thing to do would be to replace them with new ones. Certain types of lifters today have suction cups that may be replaced. However, if the cup is still in good condition, rimming it with glycerine will provide a tight seal and at the same time serve to keep the rubber pliable and active.

Lime Irritation

Recently we have had several of our men complain that they have been getting sores on the arms. While these are localized they are painful to the men and irritating. These men are employed in the production of lime. What are the best preventives?

T. W., Nashville, Tenn.

Workmen exposed to lime dust frequently suffer from skin injuries which are caused by unslaked lime. These lime burns are caused by the slaking of the quicklime particles in the perspiration of the worker. Incidence of this is higher in warm than cold weather.

Whenever practicable, prevention is suggested through the suppression of quicklime dust by means of local exhaust ventilation. This will remove the lime particles from the air and reduce to a minimum the possibility of the lime dusts settling on the workmen. Where this is not possible, and even sometimes when such ventilation is supplied, it is recommended that the workers spread talc powder or protective ointments on the exposed parts of the skin. Both of these are readily available on the market. Treatment consists of applications of mild ointments or lotions.

Lead Sulfate Hazard

We would appreciate your advising if any good masks are on the market that will pro-

tect against inhaling of basic lead sulfate ($PbSO_4 \cdot PbO$).

R. F. M., Newark, N.J.

It is indicated by the nature of the products you manufacture that the lead sulfate is introduced into your process as a powder, then during the course of the production processes becomes a vapor or fume.

This distinction is important because the elimination of a dust is not as difficult as the elimination of a fume. There are several standard respirators which will eliminate the inhalation of the lead sulfate dust or powder. There are very few approved respirators for protection against the inhalation of lead fumes.

RIGHT OFF THE DOCKET

[*Continued from page 30*]

ing this period. A fellow worker asked the grinder if he wouldn't smooth out the rough spots in a small casting. It would only take a minute and was a minor job. Consequently, the grinder did not put on his goggles. He took the chance and the result was a costly eye injury which forced the worker to lose three days employment and the company a doctor bill.

Sticks Can't Replace Guards

A punch press operator employed by a Cleveland firm lost three fingers of his right hand when the press repeated. He applied for and was granted compensation totaling $416.39 and later applied for an additional award, alleging violation of the provisions of the Code of Specific Requirements Covering the Operation of Presses, Hammers, etc. Investigation of the accident revealed that employees were expected to use a stick or screw driver to remove stock from the press in lieu of a guard. An additional penalty of fifty per cent was assessed against the company a sum of $208.20.

COMPENSATION LAWS

[*Continued from page 38*]

perts in the field of workmen's compensation have voiced similar views. Such expressions also have received endorsement at the National Conferences on Labor Legislation called by the Federal Secretary of Labor during the past five years.

The Obvious Trends

Industry at the present time is devoting more attention to the study and prevention of occupational diseases than ever before. The time has arrived when preventive measures must be taken to lessen the hazards of industry, and failing entirely to eradicate the evil, the individual whose health has been impaired must be compensated and not made a public charge.

Loss of wages on account of the disability of the employee caused by an occupational disease is just as serious to him and his family as though he had received a traumatic injury in the loss of a part of the body. In this ever-changing industrial world, it is but the part of wisdom for the employer to protect himself against all the "unknown" hazards of industry. The "blanket" compensation system is pretty apt to gradually become accepted in all states. Suitable safeguards against accident and health hazards, coupled with adequate insurance, should be the goal of every astute industrialist. Whether he subscribes to the principles of health and accident compensation or not, he is foolish to close his eyes to the inevitable.

Comfortable Protection

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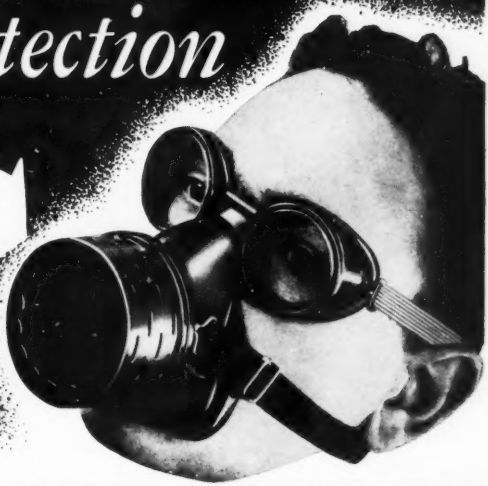

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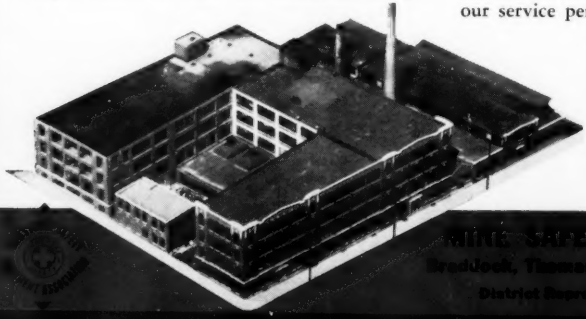

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